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EXAMINER	
CHAWAN, VIJAY B	
ART UNIT	**PAPER NUMBER**
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/658,406	DING, HEPING	
	Examiner	Art Unit	
	Vijay B. Chawan	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al., ("A New Bandwidth scalable wideband speech/audio coder", Proceedings of IEEE

International Conference on Acoustics, Speech, and Signal Processing, Orlando, FL, U.S.A., May 13-17, 2002, pages 657-660).

As per claim 1, Kim et al., teach a method of transmitting an audio stream, comprising:

estimating a perceptual mask for the audio stream, the perceptual mask being based on a human auditory system perceptual threshold (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660);

dynamically allocating a hidden sub-channel substantially below the estimated perceptual mask for the audio stream, the dynamic allocation being based on characteristics of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660); and

transmitting additional payload in the hidden sub-channel as part of a composite audio stream, the composite audio stream including the additional payload and narrowband components of the audio stream for which the perceptual mask was estimated (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 2, Kim et al., teach the method of claim 1 wherein the composite audio stream is an analog signal (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 3, Kim et al., teach the method of claim 1 further comprising the step of partitioning the audio stream into audio segments (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 4, Kim et al., teach the method of claim 3 wherein the step of partitioning is performed prior to the steps of estimating, dynamically allocating and transmitting, and wherein the steps of estimating, dynamically allocating, and transmitting are performed in relation to each audio segment (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660)

As per claim 5, Kim et al., teach the method of claim 1 wherein the step of transmitting additional payload comprises: removing an audio segment component from within the hidden sub-channel; and adding the additional payload in place of the removed audio segment component (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 6, Kim et al., teach the method of claim 5 wherein contents of the additional payload are determined based on characteristics of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 7, Kim et al., teach the method of claim 5 wherein the step of transmitting the additional payload comprises encoding auxiliary information into the additional payload, the auxiliary information relating to how the additional payload should be interpreted in order to correctly restore the additional payload at a receiver(Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 8, Kim et al., teach the method of claim 1 wherein the step of transmitting the additional payload comprises: adding a noise component within the hidden sub-channel, the noise component bearing the additional payload(Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 9, Kim et al., teach the method of claim 8 wherein the noise component is introduced as a perturbation to a magnitude of an audio component in the frequency domain (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 10, Kim et al., teach the method of claim 9 further comprising the steps of: transforming the audio segment from the time domain to the frequency domain; calculating a magnitude of each frequency component of the audio segment; determining a magnitude and sign for each frequency component perturbation; perturbing each frequency component by the determined frequency component perturbation; quantizing each perturbed frequency component; and transforming the audio segment back to the time domain from the frequency domain (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 11, Kim et al., teach the method of claim 1 wherein the audio stream is a digital audio stream, and wherein the step of transmitting the additional payload comprises: modifying certain bits in the digital audio stream to carry the additional payload (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 12, Kim et al., teach the method of claim 1 wherein the additional payload includes data for providing a concurrent service (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 13, Kim et al., teach the method of claim 12 wherein the concurrent service is selected from the group consisting of: instant calling line identification; non-

interruption call waiting; concurrent text messaging; display-based interactive services (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 14, Kim et al., teach the method of claim 1 wherein the additional payload includes data from the original analog audio stream for virtually extending the bandwidth of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 15, Kim et al., teach the method of claim 14 wherein the data from the original analog audio stream includes data from a lower band (page 479, section V-subband coders).

As per claim 16, Kim et al., teach the method of claim 14 wherein the data from the original analog audio stream includes data from an upper band (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 17, Kim et al., teach an apparatus for transmitting an audio stream, comprising:

a perceptual mask estimator for estimating a perceptual mask for the audio stream, the perceptual mask being based on a human auditory system perceptual threshold (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660);

a hidden sub-channel dynamic allocator for dynamically allocating a hidden sub-channel substantially below the estimated perceptual mask for the audio stream, the dynamic allocation being based on characteristics of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660) ;

a composite audio stream generator for generating a composite audio stream by including additional payload in the hidden sub-channel of the audio stream; and a transceiver for receiving the audio stream and for transmitting the composite audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 18, Kim et al., teach the apparatus of claim 17 further comprising: a coder for coding only an upper-band portion of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 19, Kim et al., teach an apparatus for receiving a composite audio stream having additional payload in a hidden sub-channel of the composite audio stream, comprising:

an extractor for extracting the additional payload from the composite audio stream; an audio stream reconstructor for restoring the additional payload to form an enhanced analog audio stream; and a transceiver for receiving the composite audio stream and for transmitting the enhanced audio stream for listening by a user (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 20, Kim et al., teach the apparatus of claim 19 wherein the extractor further comprises means for estimating a perceptual mask for the audio stream, the perceptual mask being based on a human auditory system perceptual threshold (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 21, Kim et al., teach the apparatus of claim 19 wherein the extractor further comprises means for determining the location of the additional payload (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 22, Kim et al., teach the apparatus of claim 19 wherein the extractor further comprises means for decoding auxiliary information from the additional payload, the auxiliary information relating to how the additional payload should be interpreted in order to correctly restore the additional payload (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 23, Kim et al., teach the apparatus of claim 19 wherein the audio stream reconstructor comprises: an excitation deriver for deriving an excitation of the audio stream based on a received narrowband audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 24, Kim et al., teach the apparatus of claim 23 wherein the excitation is derived by using an LPC scheme (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 25, Kim et al., teach a method of communicating an audio stream, comprising:

coding an upper-band portion of the audio stream; transmitting the coded upper-band portion and an uncoded narrowband portion of the audio stream; decoding the coded upper-band portion of the audio stream; and reconstructing the audio stream based on the decoded upper-band portion and the uncoded narrowband portion of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 26, Kim et al., teach the method of claim 25 wherein the step of coding the upper-band portion of the audio stream comprises: determining linear

predictive coding (LPC) coefficients of the audio stream, the LPC coefficients representing a spectral envelope of the audio stream; and determining gain coefficients of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 27, Kim et al., teach the method of claim 25 wherein the upper-band portion of the audio stream is coded and decoded by one of: an upper-band portion of an ITU G.722 codec, and an LPC coefficient portion of an ITU G.729 codec (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

As per claim 28, Kim et al., teach an apparatus for communicating an audio stream, comprising:

a coder for coding an upper-band portion of the audio stream; a transmitter for transmitting the coded upper-band portion and an uncoded narrowband portion of the audio stream; a decoder for decoding the coded upper-band portion of the audio stream; and a reconstructor reconstructing the audio stream based on the decoded upper-band portion and the uncoded narrowband portion of the audio stream (Introduction, section 3 – Highband coding algorithm, pages 657, 658-660).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Davidson et al., (5,727,119) teach a method and apparatus for efficient implementation of single-sideband filter banks, providing accurate measures of spectral magnitude and phase.

Davis et al., (5,451,954) teach quantization noise suppression for encoder/decoder system.

Fielder et al., (6,226,608) teach data training for adaptive block length coding system.

Fielder (6,124,895) teaches frame based audio coding with video/audio data synchronization by dynamic audio frame alignment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vijay B. Chawan whose telephone number is (571) 272-7601. The examiner can normally be reached on Monday Through Friday 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Primary Examiner
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vbc
6/6/07

VIJAY CHAWAN
PRIMARY EXAMINER